DOCUMENT RESUME

ED 286 470 IR 012 802

TITLE	Minnesota Technology Demonstration Sites.
INSTITUTION	Minnesota Curriculum Services Center, White Bear Lake.; Minnesota State Dept. of Education, St. Paul.
REPORT NO	B820b; MSCS-1702-286500
PUB DATE	Jan 86
NOTE	51p.
PUB TYPE	Reports - Descriptive (141)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	*Computer Uses in Education; Curriculum Development; *Demonstration Programs; Educational Objectives; Educational Research; *Educational Technology; Elementary Secondary Education; *Information Technology; State Programs; *Telecommunications
IDENTIFIERS	*Minnesota

ABSTRACT

Reasons for the importance of using technology in education and problems encountered by Minnesota schools in maximizing the potential of modern technology are discussed in the introduction to this report, which also summarizes actions taken by the state legislature to support technology utilization, inservice training for the use of technology, courseware package evaluation, courseware purchase, courseware package development, and technology demonstration sites. Programs at the 20 demonstration sites in the state are then described individually, including their technological focus, objectives, areas of research, and a contact person. The various technologies that can be observed at the sites are noted, including: (1) microcomputers; (2) networked computer labs; (3) computer literacy and programming curricula, K-12; (4) instructional television; (5) teleconferencing; (6) automated libraries; (7) computer software; (8) video production; (9) two-way interactive television; (10) satellite telecommunications; (11) robotics; (12) computer networks; and (13) online databases. Line drawings are used to illustrate many of the individual reports. (MES)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED286470

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

Minor changes have been made to improve reproduction quality.

Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Mildred K. Mueller

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Inquiries about the Technology Demonstration Site Project or other technology sections of Article 8 may be directed to:

Gilbert Valdez, Manager
Curriculum and Technology Section
Minnesota Department of Education
684 Capitol Square Building
550 Cedar Street
St. Paul, Minnesota 55101
(612) 296-4058

Inquiries about specific Technology Demonstration Sites should be directed to the Project Director.

The Minnesota Curriculum Services Center is supported by the State of Minnesota Department of Education and the State Board of Vocational Technical Education. The MCSC does not discriminate on the basis of race, color, creed, religion, sex, national origin, marital status, status with regard to public assistance or disability.

MINNESOTA CURRICULUM SERVICES CENTER
3554 White Bear Ave. White Bear Lake, MN 55110
(612) 770-3943 800-652-9024

MINNESOTA TECHNOLOGY DEMONSTRATION SITES

Minnesota Department of Education
Curriculum and Technology Section

January 1986

TABLE OF CONTENTS

	Page
Introduction	1
Austin-Rochester High-Technology Demonstration Site	6
Bloomington Information Technology Systems (BITS)	8
Blue Earth Public Schools - Project BEACON	10
East Central Minnesota Educational Cable Cooperative	13
Hopkins Technology Demonstration Site	15
Innovative Inservice for Integrating Technology in Classrooms	17
Knowledge Interactive Distribution System	19
Mid-State Educational Telecommunications Cooperative	21
Minneapolis Technology Demonstration Site	23
Minnesota Valley Tele-Network	26
Northeast Educational Technology Consortium	28
St. Louis Park/Tower-Soudan Demonstration Site	30
Shakopee Technology Demonstration Site	32
Sherburne-Wright Educational Technology Cooperative	33
Sibley County Cooperative	35
Southwest Minnesota Telecommunications Project	36
Subject Matter Awareness - Implementation of Resources in Technology	38
Technology Learning Campus	40
Use of Integrated Computer System Instruction in Reading and Math	42
Woodland Cooperative Center Communicasting	44

INTRODUCTION

The sections of Article 8 in the Educational Omnibus Bill dealing with educational technology have received a great deal of state and national attention. The comprehensiveness of this effort and its sizable $6,300,000 biennial budget are factors in its national identity. The degree of participation by districts in a voluntary program and the quantity and quality of assistance given at the Minnesota Technology Demonstration Sites are reasons for its visibility in the state.

Technology is extremely important to Minnesota's economic well-being. Given our cold winters, lack of energy resources and the existence of a highly educated population, technology is extremely appropriate for reducing our disadvantages and exploiting our advantages. Forty percent of our economy is linked to high technology. Minnesota's national and world business identity revolves around such names as 3M, Control Data, Honeywell, Sperry, IBM and Cray Research. All have major operations employing thousands of people. Equally significant, the other business identities that Minnesota has, such as those of a banking, medical research, insurance and agribusiness center are also technology intensive.

Beyond economics, there are several major reasons it is important to use technology in education. The most obvious one today is use of technology to help provide better instruction. Examples include providing low-incidence courses, individualizing education, providing drill and practice, managing learner objectives and monitoring student progress. Technology in schools also helps students access information and enhances their ability to think, make decisions and solve problems. Technology tools such as databases, electronic spreadsheets, word processors and simulators allow students in all geographic locations to manage data in a very sophisticated manner. Telecommunications allow motivation and interest to be the major determinant of lifelong learning by reducing present limiters of participation--age and location of residents.

Given economic and educational reasons, it will probably not surprise readers that Minnesota's people expect their students to be knowledgeable about technology and its uses. In fact, Minnesota has been perceived as a leader in educational technology for many years. State-owned Minnesota Educational Computing Corporation (MECC) and Council on Quality Education (CQE) projects provided schools with quality courseware at a time when commerical producers were not ready or willing to risk development funds. Minnesota's research money also encouraged districts to experiment with new methods of delivering instruction. For instance, CQE funding made possible the first installation of a low-power two-way television school network and the first K-12 production and use of videodisks in the United States.

However, like other states and provinces, Minnesota was having difficulty maximizing the potential which modern technology offers schools. Most people agreed that Minnesota's technology educational efforts were random, and often showed little direct link to the existing missions of schools. Instead of using technology to enhance learning, educational technology efforts were focused around teaching students to program computers; even that effort was made rather poorly. Where technology was used for instructional purposes, it was often done in a drill-and-practice format, accomplishing nothing more than using technology as electronic workbooks. Even more foreboding, technology was being perceived as the domain of only a few subject areas.

Courseware was another major problem. Thousands of software items were being produced, but only about twenty percent warranted use. Teachers were frustrated that there was not initial selection and felt unable to devote large amounts of time to preview materials. Even when good software was found, teachers were unable to obtain content-related inservice. Many teachers recognized the importance of technology, but were unaware of or unable to visit schools where successful uses of technology were taking place.

Education leaders cautioned Minnesota legislators that the state's perceived leadership was based on the work of a few exemplary districts and the existence of a lot of hardware and that, unless major steps were taken, there was little chance for fulfilling the potential of technology across the state. Legislators, acknowledging the importance of educational technology in educational improvement efforts and the economy, responded with a biennial budget of $6,300,000 for the following educational technology initiatives:

TECHNOLOGY UTILIZATION PLANS

A problem that was quite obvious to many people revolved around purchases of equipment without a clear understanding of where in the curriculum the technology, especially computers, would be used. Many school districts, concerned that they not be viewed as backward, purchased equipment first and worried about integrating it into the curriculum only when faced with using the equipment. Many districts perceived computer literacy as an end in itself and viewed programming as the concluding activity of a student's interaction with technology. Even more discouraging, many of the equipment purchases were found to be inappropriate or lacking sufficient courseware.

To encourage technological planning, the Minnesota Legislature provided technology planning incentives. Every school district in the state was given the opportunity to receive 75 cents per student or a minimum of $500, whichever was more, to develop a technology utilization plan. The Minnesota Department of Education was given responsibility and funds to develop support documents and model plans that districts could use for their own districts. The Minnesota State Board of Education and the Minnesota Department of Education were given responsibility for determining the criteria and approving the plans.

The Minnesota Department of Education, with the assistance of school district personnel acknowledged for their technology planning skills, developed a 94-page document titled "Planning for Educational Technology." The Department then inserviced the document in 15 workshops throughout the state.

School districts responded extremely positively to these technology planning incentives. Ninety-seven percent of the districts applied for funds and submitted satisfactory plans. Evaluations indicated that the districts found the document and the workshops very helpful and many have indicated that they plan to use the same procedure to develop plans for various other curriculum areas.

INSERVICE TRAINING FOR USE OF TECHNOLOGY

Needs assessment and testimony before the Legislature indicated that inservice training for staff should be a priority. It was clear that a variety of opportunities should be made available in a variety of formats. Sufficient funds were allocated to provide districts with $1 per student for inservice, which district staff determined to be of highest priority to them. To receive these funds, districts needed an approved technology utilization plan and a brief agenda of activities that would be offered to staffs with the monies from this section of the law. Funding of seven regional MECC coordinators was a second kind of inservice assistance to districts. These coordinators had special responsibility for making district people aware of new MECC materials and helping them learn how to use them. MECC coordinators were also able to provide ongoing regional assistance in other areas of high priority to districts.

The Minnesota Department of Education was allocated $220,000 to provide state and regional workshops that had appeal beyond one district. These funds are being allocated in the following manner: Approximately one-third of the money is being used to fund special interest workshops, one-third to provide advanced implementation assistance workshops and one-third to professional content or interest organizations to provide programs to their clientele groups. The grants to professional organizations have been especially well received by educators and it has given those organizations additional viability. Approximately 5,500 people participated in inservice activities during the first year and another 15,000 people participated the second year in workshops funded through the Department's appropriation.

COURSEWARE PACKAGE EVALUATION

A major frustration for educators attempting to use technology has been the unknown quantity and quality of software on the market. For some content areas, there are limited amounts of software produced by small production houses whose expertise is unknown. For other areas, such as elementary mathematics, the quantity is so immense that teachers are unable to review all software materials.

Minnesota has attempted to deal with this problem by developing the "High Quality Courseware List," which it publishes every six months. The "High Quality Courseware List" is an evaluation rather than an approved or disapproved courseware list; districts may purchase what they wish. The state will, however, reimburse school districts for 25 percent of the cost up to $1 per student for materials purchased which are included on this list.

Evaluation of courseware materials is done by specially designated teams that use standardized Minnesota State Board of Education--approved checklists. Each team consists of three practicing teachers from the appropriate grade level or content area who field-test the packages in their classrooms; one technology expert knowledgeable in software and documentation techniques; and one curriculum expert from the Minnesota Department of Education or a designee. Non-department evaluators are paid a small stipend per disk depending on the number of disks included in each package.

COURSEWARE PURCHASE

Article 8 Legislation authorizes the Minnesota Department of Education to purchase rights to duplication of courseware and/or make volume purchases if the courseware packages "are available to the state at a lower cost than if purchased by school districts individually." The Minnesota Legislature has appropriated nearly $500,000 over a four-year period for this purpose. During the first years, about half of the expenditures were focused on purchases of video materials and computer utility materials which could be used with a variety of subject areas. The rationale was that in every school, several people found very appropriate uses of materials that were more generic. The other half of the funds were used to purchase courseware that encouraged thinking skills in a variety of content areas.

COURSEWARE PACKAGE DEVELOPMENT

The Minnesota Legislature also gave the Department $500,000 over four years and the authority to contract for the design and development of courseware packages which will meet the needs of the school districts and which otherwise are unavailable or too expensive for individual districts or the State of Minnesota to purchase. A major use of these funds had been to design and develop packages which help students learn how to manage information, especially through use of databases. Another priority has been the development of videodisk courseware which would both provide students assistance in content areas and make teachers aware of the potential of this technology.

TECHNOLOGY DEMONSTRATION SITES

The Minnesota Technology Demonstration Sites are the most visible components of Minnesota's technological innovations. Partially, this is because the $2.2 million appropriation in each biennium was significant, but more because of the great interest by districts to be designated exemplary sites and thus benefit from additional funding and prestige.

Almost everyone agrees that demonstration sites are crucial in Minnesota's efforts to increase the quality use of technology. There are numerous reasons why demonstration sites are important. Four of those reasons are:

1. Technology, to have meaning, must be experienced. Most educators did not have opportunities to use or receive instruction through technology. They are not aware of the changes and opportunities that have developed in the last few years. Technology becomes most tangible through use.

2. Technology inservice, to have credibility, must be based in actual school settings. Teachers, to be believers, need to see other teachers successfully use technology while working under real conditions, with a variety of students. We have found that a visit to a site has more initial meaning to teachers than extensive inservice offerings.

3. Technology use and inservice, to be improved, must be done under conditions that have enough commitment, equipment and trained staff to test desired effects.

4. Educators need opportunities to visit locations that have people available who can help visitors see the significance of their efforts and help them envision appropriate applications in the visitor's school district. Additionally, funds need to be available for transportation costs of visitors so that travel money does not become the excuse for not visiting sites. The Minnesota Legislature designated $300,000 each biennium for transporation incurred by visitors from other Minnesota public schools and for workshops conducted at or by Minnesota Technology Demonstration Sites.

The original 15 demonstration sites and the five new sites offer learning opportunities to all districts regardless of their size or technological sophistication. The sites will show visitors a variety of technologies in very different settings. Visitors can choose to see five different delivery systems of two-way television ranging from microwave to fiber optic. They can observe the advantages and disadvantages of using computers in four different classroom organizational formats. They are able to visit sites which have one dominant technology or visit sites with six or seven major technologies. Size of host districts ranges from a few hundred students to thirty-four thousand. There are sites that serve only one district and others that serve more than 15. They are located in areas ranging from the lightly populated lake country of the far north to the most innercity. Some sites are known nationally for their technology curriculum management programs and others are themselves just recognizing the potential of their equipment. The most significant component of all the sites, however, are the people who have a responsibility to help visitors make sense of what they are observing and recognize appropriate applications of educational technology in their own schools.

TECHNOLOGY DEMONSTRATION SITES

AUSTIN-ROCHESTER HIGH-TECHNOLOGY DEMONSTRATION SITE

School districts often have different technological resources and capabilities which would, if shared, provide mutual benefits to students. Acknowledging this, the Austin-Rochester High-Technology Demonstration Site combines the districts' expertise in instructional television and microcomputers and shares it with area school districts.

The Austin Public School District owns and operates KSMQ, Channel 15, a full-power public broadcast television station, and is a pioneer in providing quality educational programming to its students and community, e.g., interactive foreign language classes and microcomputer instruction.

Through the years, the Rochester Public School District has maintained a national reputation in curriculum development and microcomputer instruction. The district also enjoys an excellent relationship with IBM Rochester, as exemplified by the IBM Schools Cooperative Project. Since 1981, IBM and the Rochester School District have collaborated in this project to train Minnesota secondary students and educators. In addition, the district is one of 15 nationwide demonstration sites for IBM's Writing to Read project.

The Rochester School District is also active in educational office management and instructional software development. District staff have participated in several projects related to software, including Sunburst Corporation's Computer-Assisted Problem Solving Project (CAPS).

The Rochester School District maintains the Rochester Instructional Television Service (RITS). RITS uses an institutional cable loop to cablecast from one building to another throughout the district. An interactive television Spanish class is being offered during the 1985-86 school year.

The Austin-Rochester High-Technology Demonstration Site focuses on the use of:

- Microcomputers
- Networked computer labs
- Computer literacy and programming curriculum, K-12
- Closed circuit television production studio
- Public broadcast television station
- Linked instructional television studio with a private cable system
- Point-to-point microwave
- Closed circuit and public television station interconnect between the two districts
- Business/school cooperative plans

The Austin-Rochester High-Technology Demonstration Site's objectives are to:

- Provide continuing on-site inservice for area schools;
- Explore the uses of technology in education, including interactive video, teleteaching, data transmission, computer labs and teleconferencing;
- Develop a software bank for teachers to review available software;
- Provide on-site software showings for school districts;
- Assess and plan for long-term needs and devise ways in which technology might meet these needs.

The Austin-Rochester High-Technology Demonstration Site is giving priority to developmental research and evaluation in the following area:

- Two-way television

TELECOMMUNICATIONS AND COMPUTER INSERVICE

Inservice training on instructional telecommunications and microcomputer technology is provided both locally and on-site, providing an opportunity for the Austin-Rochester districts to share their technology experiences and expertise with other districts. Inservice training assists smaller districts in integrating technology into ongoing classroom practice and in expanding curriculum opportunities.

Inservice training programs for area educational personnel may be tailored to specific needs. A regional advisory committee comprised of representatives from participating school districts assesses specific needs and makes recommendations regarding inservice.

For further information contact:

Mahlon Wissink
Rochester Public Schools
615 SW 7th Street
Rochester, MN 55902
(507) 285-8732

BLOOMINGTON INFORMATION TECHNOLOGY SYSTEM (BITS)

The Bloomington Information Technology System (BITS) demonstrates 24 technology components to help disseminate information about their use and to encourage their widespread application throughout other Minnesota schools.

BITS focuses on the use of:

- Computer labs for microcomputer instruction in curricular areas and instructional management
- Satellite receiving equipment for educational teleconferences and enriching classroom instruction
- Television production studios with interactive teaching via closed circuit and cablecast as well as video instruction using teacher- and student-produced videos

BITS' objectives are:

- Helping teachers become more sophisticated users of technology for instructional purposes;
- Demonstrating and encouraging the widespread use of building-piloted exemplary programs and practices;
- Demonstrating the multipurpose use of cable television and video for instruction and infusing microcomputer technology into instructional programs;
- Researching the cost-effectiveness and transferability of the instructional strategies and resource materials at BITS and accounting for their impact on students.

The district's long-range comprehensive program improvement plan calls for incorporating appropriate instructional technology into each subject area as that subject's curriculum is revised.

BITS is giving priority to developmental research and evaluation in the following areas:

- Curriculum development and evaluation in word processing, health and CAMPLUS
- Integrating graphics into curriculum development
- Developing an implementation manual

BIT'S uses of technology for instructional purposes can be divided into the following categories:

FASTER, BETTER COMMUNICATIONS SYSTEMS

Includes telecommunications network with:

Electronic bulletin boards
Data search from educational networks via modem
Meteorology data for earth science instruction via modem

Use of television and video for:

Interaction between schools and "Issues-for-Students" seminars via two-way interactive cable television
Staff development workshops using call-in audio interaction
Satellite dish for teleconferencing and accessing educational channels
Video lessons produced by students and teachers

PROVEN TECHNOLOGIES FOR INSTRUCTIONAL SYSTEMS

The following practices are being implemented in at least one Bloomington school and are ready for replication in other schools:

Instructional support using microcomputers
Computer-assisted drafting for senior high industrial technology
Communications and robotics for junior high industrial technology
Health profiles computerized data management in junior and senior high health classes
LOGO problem solving, grades 1-6
Synthetic speech accessory, grades 3-6
Word processing for writing improvement, grades 5-6

Computerized Instructional and Data Management Systems:

Annehurst Curriculum Classification System (ACCS), grades 1-6
CAM Plus instructional management system, grades 1-6
Library circulation management, elementary schools
Library catalog search and circulation management, senior high
Data management for music department, senior high
Computerized home phoning for attendance, senior high

TEACHER CREATIVITY FOR SYSTEMS IMPROVEMENT

These strategies for improving instruction have been originated or developed by Bloomington teachers, and are being tried for possible district-wide application:

Drills for clinical language and speech, grades 3-6
Language arts grading management, junior and senior high
Learner profiles for special education, junior high
Simulation programs for computer ethics, grades 5 and 8
Skills practice lessons programmed by high school students for grades 4-6

For further information contact:

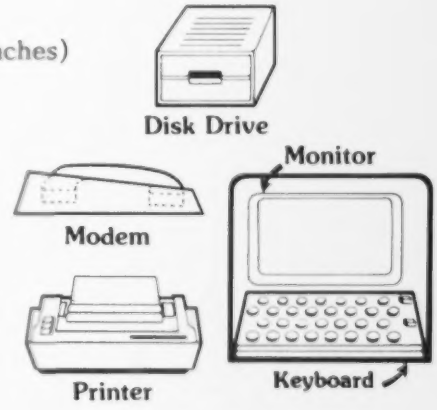
Wallace Kennedy or John Parker
Bloomington Public Schools
8900 Portland Avenue South
Bloomington, MN 55420
(612) 887-9152

BLUE EARTH PUBLIC SCHOOLS - PROJECT BEACON

Project BEACON is the result of district and community commitment to technology-assisted education. Through community resources, BEACON employs a full-time school/community computer coordinator. The project has three high technology classrooms and four planned model computer learning centers. Using technology to better deliver curriculum is the overall goal of the project. An in-depth evaluation of the process is being undertaken by the Minnesota Department of Education.

Project BEACON focuses on the use of:

- Microcomputers
- Printers
- Computer labs networked with hard disk drives
- Computerized classroom (Apple classroom of tomorrow) which includes two computers for each student--one at home and one at school
- Computer lab without network
- Computerized team classrooms
- Keyboarding
- Word processing
- Demonstration large-screen television (45- and 25-inches)
- Voice input module
- Voice print
- Modems and other peripherals
- Automated school libraries
- Assorted educational and word processing software



Project BEACON's objectives are to:

- Use technology to address special education needs;
- Saturate the schools with computers to ensure access for curricular areas;
- Initiate keyboarding/word processing at grade three.

Project BEACON has:

Expanded the fourth-grade computerized classroom concept to include grade five;

Expanded the writing through word processing program to include grades three through twelve;

Expanded the community resource file to include elementary, secondary and public libraries, making these resources available to all students, educators and citizens.

Project BEACON is giving priority to developmental research and evaluation in the following areas:

- Extensive evaluation
- Expanding the use of computers to include:

  Special Education use;

  Classroom and instructional formats

COMPUTER CLASSROOMS

For years, teachers have taught their students as groups or subgroups rather than as individuals. Subgrouping and individualizing instruction based on interest and ability show great promise, but dramatically increase a teacher's workload. To counteract this increase in workload, individualized, computerized education plans are used to meet curriculum and instructional needs. This includes the use of existing software and a variety of computerized evaluation and management systems. The computer is used whenever it is the most effective tool for teaching. The model includes a self-contained computerized classroom (Apple classroom of tomorrow which includes two computers for each student, one at home and one at school) and two self-contained team teaching rooms; one at fourth grade and one at fifth grade.

SPECIAL EDUCATION

The special education departments of the elementary and high school teach with computers, allowing for greater variety of teaching strategies, opportunities for drill, and documentation of the progress and effort made by students in the program. Because education is individualized, it provides more time and opportunity for learning.

COMMUNITY RESOURCE FILE

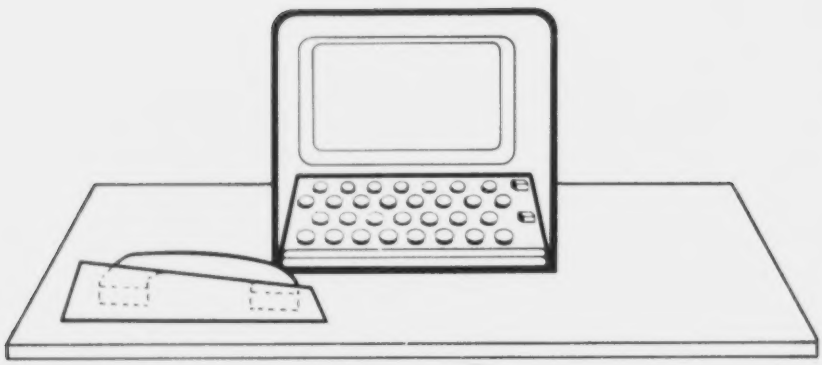
This system acknowledges the many educational and human resource possibilities found in any community. The problem for many schools is finding out what and who is out there beyond the walls of school and how these resources can be accessed. Sometimes community services and resources are needlessly duplicated. The community resource file is accessed through computers located in fully automated school libraries. Information searches are available from either school libraries (regarding the school collection) or the public library. Community resource people are also listed on the file.

WRITING THROUGH WORD PROCESSING

The use of word processors enhances the language arts program, allowing students in grades 3-12 to devote more time to writing skills, providing them with a visual picture of sentence and paragraph development and enhancing their motivation to write. Rewriting becomes easier and less boring to students because single words and entire paragraphs can be moved quickly and easily. Teacher time spent on evaluation will be more effective. Certain software packages can be used to assist students in evaluating their own work.

For further information contact:

Gary J. Honken
Blue Earth Public Schools
6th and Galbraith
Blue Earth, MN 56013
(507) 526-3215

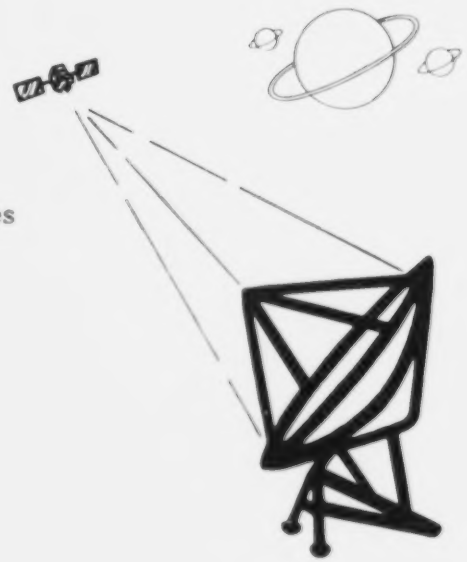


EAST CENTRAL MINNESOTA EDUCATIONAL CABLE COOPERATIVE

The East Central Minnesota Educational Cable Cooperative (ECMECC) technology demonstration site illustrates interactive television's potential for expanding course offerings for students in small districts. ECMECC involves seven area school districts: Cambridge-Isanti (fiscal agent), Braham, Milaca, Mora, Ogilvie, Pine City and Princeton, and a private cable television company, East Central Minnesota Cablevision.

ECMECC focuses on the use of:

- Two-way interactive television
- A fully equipped television studio
- Satellite terminal
- Franchised cable and microwave technologies
- Corvus hard disk networking system
- Teleconferencing
- Microcomputers
- Programmable robotic welder
- Videotaping
- Instructional and management software



ECMECC's objectives are to:

- Expand and enrich the curriculum in each of the participating districts through interactive television courses;
- Teach all employees about the uses of cable interactive technology and provide for the technology's exposure to community members;
- Examine current computer use in the districts and identify other effective uses of computer technology;
- Establish systems for evaluating, purchasing, organizing, repairing and disposing of computer hardware, and for inventorying, purchasing and evaluating computer software;
- Explore the potential of instructional progamming via television satellite;
- Demonstrate new solutions to the many problems confronting small school districts, e.g., reduced operating funds, declining enrollments, curtailed course offerings and staff shortages (particularly in areas of specialized curriculum and instruction).

ECMECC is giving priority to developmental research and evaluation in the following areas:

- Instructional television diffusion/implementation assistance
- Attitudes and performance
- Data transmission
- Interactive television curriculum integration activities

The technologies used at ECMECC may be divided into the following components:

THE INTERACTIVE TELEVISION COMPONENT

This system employs both cable and microwave technologies for two-way visual and audio communication. Each school district will have a fully equipped television classroom which will allow a teacher at one location and students at one or more district locations to see and hear one another. The system will be used throughout the school day and evenings to meet the educational needs of students and adults. The institutional cable in each community has a twenty-five channel capability.

High school courses for the 1985-86 school year include: advanced accounting, advanced shorthand and advanced placement English, astronomy/meteorology, calculus, college algebra and probability, French, German I, Latin, Spanish I, II and III, speed reading and study skills and "World at War."

THE SATELLITE COMPONENT

The satellite dish can receive signals from 12 satellites, each of which has a 24-channel capability. A satellite primer containing schedules, program ranges, copyright provisions and information regarding the availability of videotaped programs will be provided to all participating schools. A procedure to identify and implement appropriate programming and to address the copyright issue is being developed.

THE COMPUTER COMPONENT

This component's primary objective is to provide effective inservice education with the purpose of making computers an integral part of the educational process. To achieve this end, the participating districts combine their resources and expertise to effectively manage hardware and software.

For further information contact:

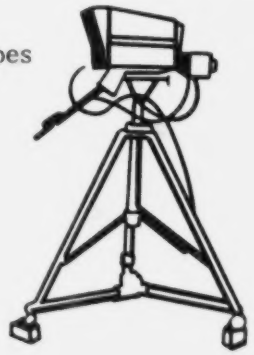
Brad Windschill
Westview High School
Braham, MN 55006
(612) 396-3674

HOPKINS TECHNOLOGY DEMONSTRATION SITE

The Hopkins Technology Demonstration Site is the result of the district's long-term commitment to an educational program designed to prepare students for the learning age. Technology is viewed as an essential component for a well-balanced curriculum, a subject matter in its own right and a means to enhance learning in the traditional curriculum.

The Hopkins Technology Demonstration Site offers visitors information on:

- Student cable and videotape television production
- Computerized library circulation systems
- A series of teacher-produced elementary science videotapes
- Optical scanners/card readers and their uses
- Considerations in implementing satellite feed
- Community education video
- Administrative computer uses
- A district-wide software catalog
- Microcomputers and word processors
- Technology education center (a district-level technology support team)
- Elementary music instruction via computer and synthesizer



The major focus of the Hopkins Technology Demonstration Site is to:

- Implement a computerized instructional management system that provides a means of determining, recording and reporting student mastery levels of pre-defined instructional objectives in reading, math and other curriculum areas;
- Locate, evaluate, develop and integrate computer software and teaching materials that help deliver thinking skills within the existing mathematics curriculum;
- Provide inservice programs in technology which facilitate and support staff development in the classroom application of technology.

The Hopkins Technology Demonstration Site is giving priority to developmental research and evaluation in the following areas:

- Use of technology for thinking skills
- Mastery learning

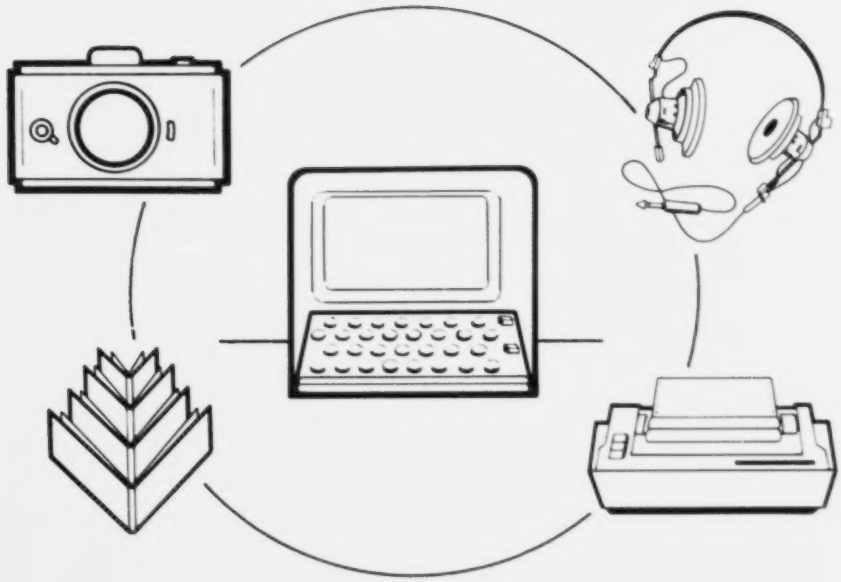
TECHNOLOGY EDUCATION CENTER

The purpose of the Technology Education Center (TEC) is to serve the center's schools so that students, staff, community and visitors may take advantage of a more technology-intensive future. The center serves as a focal point or clearing-house for information, evaluation, training and material acquisition in technology. The center supports and facilitates the exploration of connecting links between technology and curriculum delivery.

New technologies are providing tools for use in all aspects of life. In education, these tools represent a valuable resource. If the tools are to be used effectively, they must be connected with: a variety of curriculum concepts, disciplines and instructional strategies; a range of media and technological materials; skills building; a variety of learning experiences; and a method of evaluating learning that will be accepted by students, teachers and the community.

For further information contact:

Dr. Donald Sension
Director of Research, Evaluation and Information Systems
Hopkins Public Schools
1001 Highway 7
Hopkins, MN 55343
(612) 933-9230



INNOVATIVE INSERVICE FOR INTEGRATING TECHNOLOGY IN CLASSROOMS

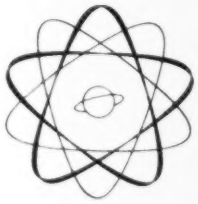
Innovative Inservice for Integrating Technology in Classrooms (IN-TECH) involves eight school districts: Anoka-Hennepin (fiscal agent), Brooklyn Center, Centennial, Columbia Heights, Elk River, Fridley, St. Francis and Spring Lake Park. Anoka Ramsey Community College, the Anoka Vocational Technical Institute and the Total Information Education System (TIES) are also project participants.

The IN-TECH program is a delivery system for retraining and continuing the education of staff via computers and other technologies. IN-TECH demonstrations are held at resource centers/videotaping laboratories which house a variety of courseware. The primary demonstration laboratories are located in the Fridley and Anoka-Hennepin School Districts.

A mobile lab includes appropriate hardware and software and a selection of the videotapes and materials housed at the permanent demonstration sites. This mobile lab visits school sites to enable teachers to view videotapes and obtain hands-on experience with technology. All labs are available during the day for teachers and other staff members and after school and evenings for community members.

The long-term effect of addressing the staff development problem noted above enables students greater opportunities to use technology.

IN-TECH focuses on the use of the following technologies:



- Apple and IBM computer lab facilities for professional use
- Microcomputers in classroom and office sites
- Videotape, disk and satellite at school building sites
- A mobile lab retrofitted with microcomputers, videotape equipment, laser videodisk and other peripheral equipment

The objectives of IN-TECH are to:

- Upgrade the level of technology integrated in the classroom through demonstrations and inservice education;
- Establish and maintain a cadre of staff members, primarily classroom teachers, from among the cooperating districts as developer/demonstrators of technology use;
- Build a network of school contact persons, usually department chairpersons or team leaders for whom the developer/demonstrators make presentations and are available for consultation;
- Establish a multidistrict advisory committee made up of the business and industries represented in the cooperating school districts to identify desired employee skills and needs for staff training;
- Provide ongoing assistance to school district curriculum writing/revision teams, for the purpose of integrating appropriate technology within the normal curriculum adoption process;

- Use established community education programs to make the lab facilities and educational personnel available for community persons desiring technology training.

IN-TECH is giving priority to:

- Developing strategies for implementing the learner outcomes in the Minnesota Department of Education's "Information Technology" document
- Technology information dissemination to all levels of school district employees and the public
- Software-Curriculum Integration Project: index/cross referenced guide to software, with professional assistance provided to district curriculum adoption groups

A DELIVERY SYSTEM FOR INSERVICE EDUCATION

A network of 35 developer/demonstrators, who have established expertise in areas of technology and/or other areas, provide inservice programming to local district consultants, department chairs and instructional staff.

The curriculum areas include: business education, computer science, guidance and counseling, health and physical education, home economics, industrial arts, language arts, literature, mathematics, music, science, social studies, special education, teacher utilities, vocational education, word processing, thinking skills development, nonprint media and robotics.

Inservice emphasis is not on simply learning about technology but rather on the uses of technology within the classroom for a given subject area or grade level. Inservice is provided in a variety of forms to building designees responsible for providing inservice for colleagues. Developer/demonstrators screen and evaluate available software and make videotaped presentations for use in buildings and the mobile demonstration facility. Developer/demonstrators also have opportunities to work out of computer labs.

While emphasis is on microcomputers for instructional use, certain participating districts or institutions become involved in other areas such as cable television, satellite reception and taping and homebound instruction via microcomputer.

For further information contact:

Randy Johnson, Director
Anoka-Hennepin Public Schools
11299 Hanson Blvd. NW
Coon Rapids, MN 55433
(612) 755-8220

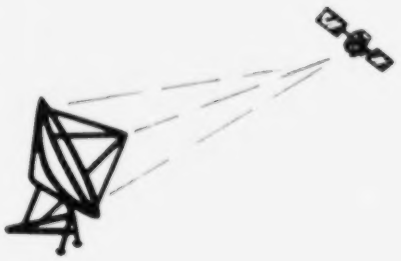
Tim Sheie, Coordinator
Fridley Middle School
6100 West Moore Lake Drive
Fridley, MN 55432
(612) 571-6000

Al Beck
Fridley Middle School
6100 West Moore Lake Drive
Fridley, MN 55432
(612) 571-6000

KNOWLEDGE INTERACTIVE DISTRIBUTION SYSTEM

The Knowledge Interactive Distribution System (KIDS) technology demonstration site involves five school districts--St. Peter (fiscal agent), Cleveland, Lake Crystal, Nicollet and St. Clair. Also involved are: Mankato State University, Mankato Technical Institute, South Central Educational Cooperative Service Unit (ECSU), Elementary Secondary Vocational (ESV) Region Five Computer Service Unit and the Regional Multi-Type Interlibrary Exchange System (SMILE).

KIDS focuses on the use of:



- Two-way interactive television
- Fully equipped television classrooms
- Microcomputers
- Microwave interconnects
- Electronic mail to facilitate communications
- On-line library catalog
- Teleconferencing

Instructional Television Fixed Service (ITFS) is being explored as a delivery system to enhance the microwave system and provide added flexibility.

KIDS objectives are to:

- Expand and enhance educational opportunities for rural students;
- Increase cooperation among schools in the region;
- Offer inservice programs for teaching staff in the use of high technology;
- Promote community use of the educational systems in the region;
- Encourage business and industry leaders to serve as advisors and share their experience with technology;
- Demonstrate the ways state of the art technologies can be integrated to connect educational institutions, businesses, libraries and households.

INSTRUCTION

KIDS attempts to solve the problems many rural schools face in trying to offer advanced or specialized courses to a small number of students. A two-way interactive video and audio system links students at all sites which their instructor, allowing them to see and hear the instructor as well as fellow classmates. In turn, the instructor can see all the students and hear their responses.

These capabilities have resulted in a broader curriculum in each of the participating school districts. Through KIDS, a school system with a small number of students interested in studying a foreign language can contact other schools to find students interested in taking the course. Those students can be linked by the two-way interactive system to create an effective regional classroom.

KIDS also has full data transmission capabilities. Mankato State University's on-line computer library catalog is connected to the five high schools associated with KIDS. Consequently, students at those sites have access to additional resources that may be used for research projects, term papers and independent study. Teachers may discover supporting materials for the curriculum. SMILE's delivery system helps library materials reach students and teachers.

INSERVICE

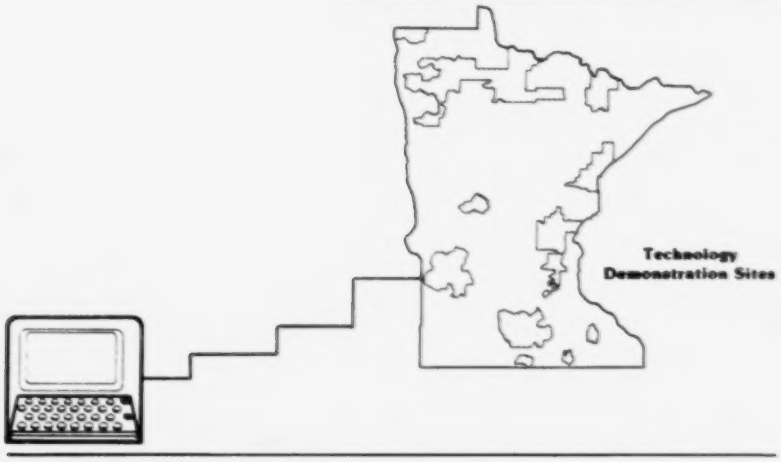
By linking teachers from several educational institutions, KIDS will expand the opportunities for inservice teacher training and facilitate the exchange of ideas. Specifically, teachers will be trained to effectively use the two-way interactive system. Additional programs will stress ways high technology can be integrated into other classroom activities. KIDS may help teachers realize the integral part technology can play in curriculum development.

OUTREACH

The system will increase educational possibilities for all community members, as well as elementary and secondary students and teachers. A variety of secondary, post-secondary and vocational courses may be offered to rural residents. Library programs, community education classes, story hours, general interest topic discussions and other programs can be transmitted via KIDS as well. Business and industry can benefit by increased employee training and, in turn, enrich the system by sharing its technical expertise.

For further information contact:

Dr. Frank R. Birmingham, Director
Knowledge Interactive Distribution System
St. Peter High School
Lincoln Drive, Room 120
St. Peter, MN 56082
(507) 931-4210, Ext. 30



MID-STATE EDUCATIONAL TELECOMMUNICATIONS COOPERATIVE

The Mid-State Educational Telecommunications Cooperative (MSET) is a cooperative of seven districts formed to provide technological service and support to its member districts of Holdingford, Little Falls, Long Prairie, Pierz, Royalton, Swanville and Upsala. MSET is working jointly with such companies as Upsala Cooperative Telephone, Minnesota Power, Northwestern Bell and the Pirelli Corporation to demonstrate the potential of fiber optics and to provide telecommunications and technological services to schools.

The Mid-State Educational Telecommunications Cooperative focuses on the use of:

- Two-way interactive television

The objectives of the Mid-State Educational Telecommunications Cooperative are to:

- Enhance curriculum offerings in member districts;
- Provide staff inservice in telecommunications;
- Provide community education and service;
- Investigate new technologies;
- Provide student, staff and community access to technology;
- Evaluate use and success of system;
- Keep staff, students and the community updated and involved in the progress of the project.

TWO-WAY INTERACTIVE INSTRUCTIONAL TELEVISION

MSET is establishing a two-way interactive television hook-up to all seven districts by means of fiber optic cable. Underground fiber optic cable will be buried to interconnect all seven districts. Each district will have an interactive classroom and equipment that converts the light signal that is transmitted over fiber to an electrical signal that can be accepted by television and monitors. All districts will have the capability to transmit one signal and receive a signal from the other six to allow for full two-way interactive communication.

With the use of fiber optic cable, MSET will receive a signal that will not be affected by weather conditions and will also allow for future expansion that is far greater than any of the previous interactive technologies. Other potential uses of the fiber optic system are:

- College credit courses
- Community education courses
- Multidistrict data transmission (computer)

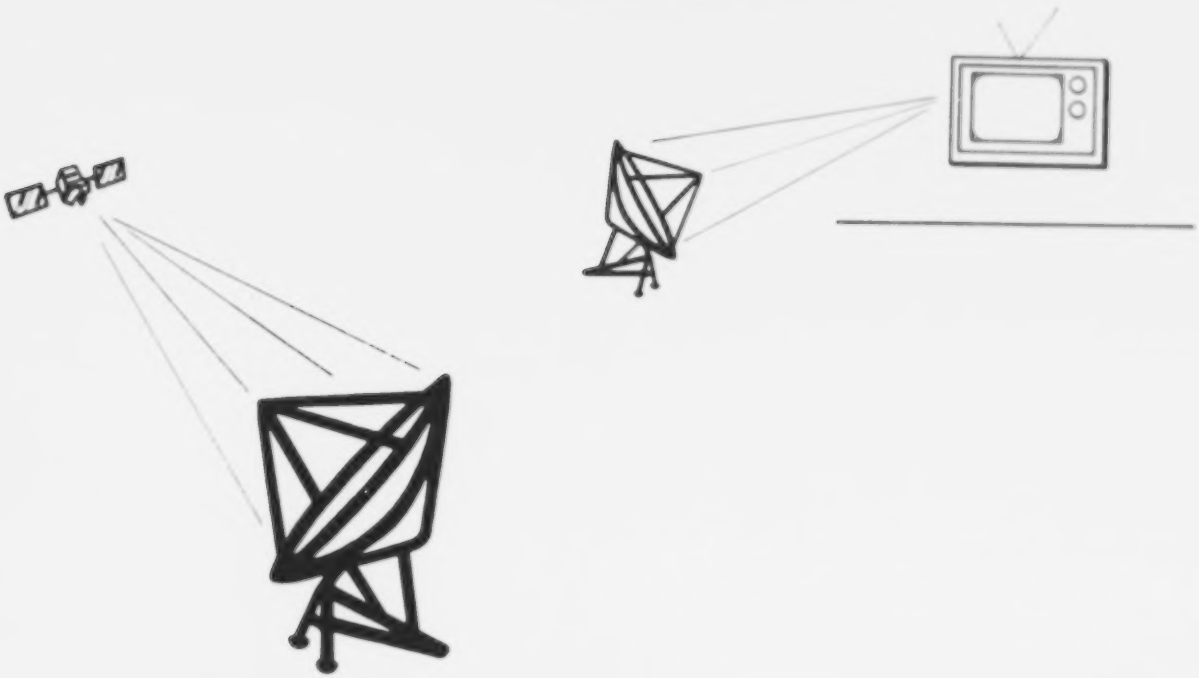
- Hard copy data transfer (facsimile)
- Television production courses
- Early childhood programming to community
- Community (business) use of sytem
- Homebound instruction
- Multidistrict satellite programming

MSET also plans to work cooperatively with member districts to achieve the following:

- Joint purchasing of technological equipment
- Staff inservice in operation of computers, satellite receive dish and audiovisual equipment
- Central supply of spare equipment for computers and audiovisual equipment
- Central repair of technological equipment
- Support for computer coordinators and media specialists

For further information contact:

Jerry Abraham
Little Falls High School
1001 SE 5th Avenue
Little Falls, MN 56345
(612) 632-2921

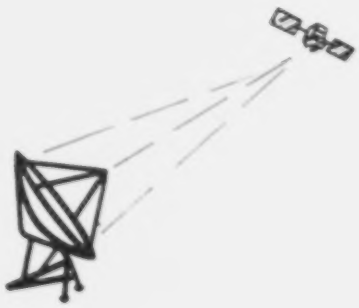


MINNEAPOLIS TECHNOLOGY DEMONSTRATION SITE

The Minneapolis technology demonstration site is a result of the district's commitment to an educational program that prepares students for the information age.

The Minneapolis technology demonstration site focuses on the use of:

- Satellite receiving equipment
- Cable television
- Computers for instruction and management
- Radio broadcast studio
- Television production studio and remote equipment
- Technical electronics



The Minneapolis technology demonstration site's objectives are to:

- Develop the technical literacy of students and staff;
- Promote the use of various technologies to support instruction;
- Use technology to provide educational and management support services in a more cost effective and efficient manner, especially in math, science and visual and performing arts.

The Minneapolis technology demonstration site is giving priority to developmental research and evaluation in the following areas:

- Integrating computers into the science curriculum
- Using satellites in the curriculum
- Curriculum integration using Minneapolis materials

MAGNET PROGRAMS

The district's efforts are exemplified in special magnet programs and media centers located at Edison and North High Schools. Magnet programs include:

KBEM Radio Broadcasting (North High School)

KBEM-FM is a 5000-watt, 24-hour per day, year-round broadcast station licensed to the Minneapolis Board of Education. It is considered by project staff to be the most technically advanced radio station in any high school in the nation. It is a four-year academic and work experience program for students interested in some aspect of broadcasting as a career field. Students serve as staff announcers, operator- engineers, studio and remote producers, engineers, news and copy writers and sports announcers. Programs are both locally produced or engineered and acquired from network feeds and two satellite earth terminals.

Summatech (North High School)

This is a four-year science-mathematics-technology program that strives to prepare students for higher education while acquainting them with what it will take to be successful in a technology-based world. Students take four years of science and mathematics and seven trimesters of technology classes, including use of the computer. These classes are scheduled in two- and three-hour time blocks and provide an interdisciplinary curriculum that focuses on a year-long science theme. The rest of a Summatech student's program is available through the North High Comprehensive Program. Access to the local scientific community through field trips, special lectures, "visit a scientist," independent project work, conference and special event participation, is an important part of Summatech.

Business Magnet (Edison High School)

This is a vocational magnet allowing students to explore career options and learn marketable skills which can prepare them for full-time employment upon graduation or part-time employment while pursuing further education, including advanced standing at the Minneapolis Technical Institute. Technology is used extensively to teach accounting, business data processing, word processing and shorthand. The curriculum uses technology to familiarize students with the management of records, the application of electronics used in business and a variety of software and other applications used by office personnel. Advanced students learn computer programming in two or more of the following languages: BASIC, COBAL, FORTRAN, PASCAL and RPG II. Students use the Hewlett-Packard 3000 mainframe computer, as well as microcomputers and Hewlett Packard and Wang word processing equipment.

Visual and Performing Arts Magnet (North High School)

This program is for students who have special interest and talent in the visual and/or performing arts. Ninth and tenth grade students take a Humanities/English integrated arts curriculum along with classes offered through the North High Comprehensive Program. In the eleventh and twelfth grades students specialize in one of five options: instrumental music, visual arts, vocal and keyboard music, drama and dance.

Technical Careers (North High School)

Students enrolled in Television Production are introduced to the use of television as a communications tool. The Minneapolis cable operation plays an integral part in this portion of the Technical Careers Magnet. Both North and Edison High Schools are internally wired to permit video signals in most instructional areas.

This magnet includes several other technical career programs: cabinet making, commerical photography, electronics, energy, fiber optics, lasers and robotics. Through these programs, students acquire technical knowledge and skills by planning, designing, constructing and evaluating materials and processes.

MEDIA CENTERS

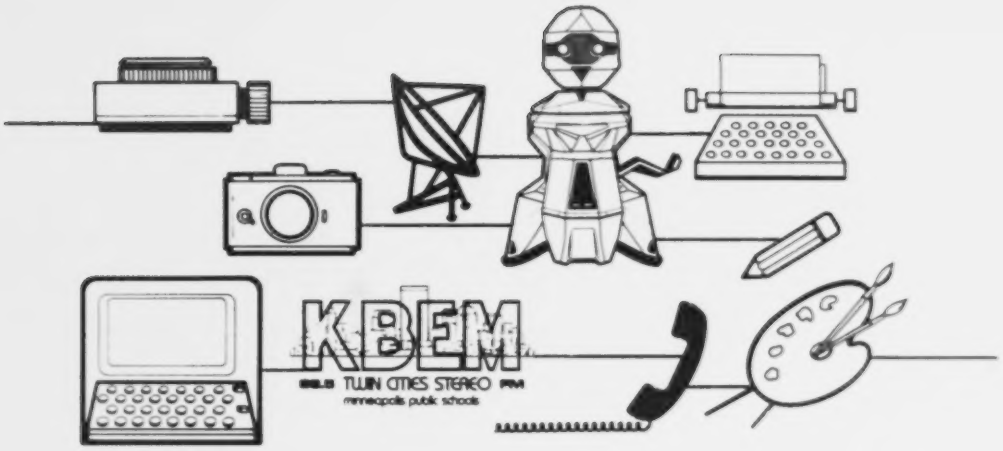
The media centers at Edison and North High Schools include computers which provide student access to word processing and programming as well as instructional applications. Electronic mail information and bibliography database searching provide students with experience in accessing information beyond the media center. Both Edison and North High Schools have installed automated circulation systems.

VISITORS

A videotape of the Minneapolis technology demonstration site enables guests to tailor their visits to their special areas of interest. The site features specialized staff and technology programs as well as state of the art equipment and facilities. Booklets on curriculum, projects, course outlines and lessons that incorporate technology are available at the site.

For further information contact:

Cort Smith
Project Coordinator
North Community High School
1500 James Avenue North
Minneapolis, MN 55411
(612) 627-2782



MINNESOTA VALLEY TELE-NETWORK

Minnesota Valley Tele-Network is a consortium of nine school districts--Montevideo (fiscal agent), Appleton, Benson, Dawson-Boyd, Granite Falls, Madison, Maynard, Milan and Ortonville--in partnership with Pioneer Public Television. Also cooperating with Minnesota Valley Tele-Network are: Southwest Area Vocational Technical Institute (Granite Falls Campus), Southwest State University, the Southwest and West Central Educational Cooperative Service Unit (ECSU) and the University of Minnesota-Morris.

The project uses new and existing broadcast capabilities to demonstrate how interactive television is expanding the curriculum. Interactive television is used for K-12 programming, as well as for inservice and continuing education, to help solve the perennial problems of staff shortage and low enrollment affecting small rural school districts.

Minnesota Valley Tele-Network focuses on the use of:

- Broadcast towers
- Omnidirectional microwave transmitters operating in instructional television fixed services (ITFS) and point to point microwave return
- Microwave interconnects
- Videotaping
- Fully equipped television studios that receive and transmit
- Data line to be activated by microcomputer
- Two-way interactive television
- Possible uses of satellite transmission

Minnesota Valley Tele-Network's objectives are to:

- Implement the interactive television system, updating it as needed;
- Plan and implement staff development activities to ensure the successful use of television technology in educational programming;
- To plan, implement and disseminate information and materials to others interested in developing an interactive system;
- Develop educational and informational programs for continuing vocational and community education groups within the nine-community consortium;
- Encourage the participation of business, social, public service, government, recreational, cultural and health organizations and the general community in the development and operation of the system;
- Provide planning and seek funding for a telecommunications system which will serve 18 counties in southwestern Minnesota.

The Minnesota Valley Tele-Network is giving priority to:

- Developing a two-way television curriculum
- Developing a planning manual
- Disseminating instructional television materials

INSTRUCTIONAL PROGRAMMING

Secondary instructional programming is offered to no more than three remote sites at a time. The project has the capacity to offer 16 class sections per day (a seven-period day, plus an early and late period).

COMMUNITY EDUCATION

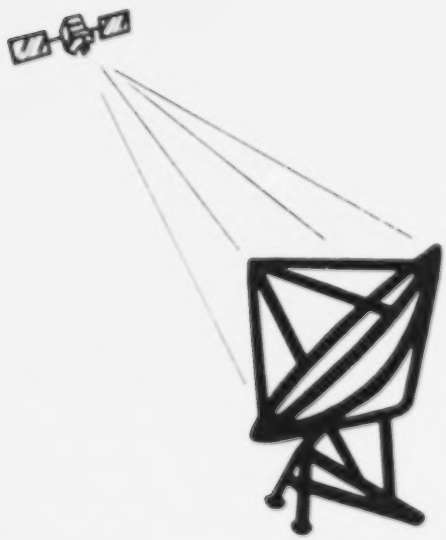
Emphasis will be given to post-secondary programming so that individuals may continue with planned undergraduate/graduate degree programs or general courses needed for updating current professional licenses, e.g., realtors, insurance agents, nursing home administrators. Courses will be developed and offered according to interests and/or needs indicated in a survey of adults in the nine-district area.

INSERVICE

Inservice training has been divided into three phases--awareness, training and practice. "Awareness" refers to training which provides staff with the history, development and purpose of the interactive television system, while "training" provides instruction on using the system, including presentation techniques, class managment procedures and actual micro-teaching. Training is followed by hands-on "practice" in a two-way interactive classroom.

For further information contact:

Lynn Steenblock
Montevideo High School
13th Street and Williams Avenue
Montevideo, MN 56265
(612) 269-9297 or 269-5474



NORTHEAST EDUCATIONAL TECHNOLOGY CONSORTIUM

Eight school districts, with a total student population of 23,000, comprise the Northeast Educational Technology Consortium--Duluth (fiscal agent), Barnum, Carlton, Cloquet, Esko, Hermantown, Proctor and Wrenshall. Through inservice activities and cooperative equipment purchases, these districts are integrating computers and modern electronic equipment into the curriculum and applying them to the secondary science laboratory.

The site represents a cooperative effort between a relatively large urban school district and smaller outlying districts in teacher education and equipment purchasing. The project is based on the belief that the effects of the technological revolution should be felt throughout the curriculum. To that end, the focus is on goals within each discipline that the districts feel are believable.

The Northeast Educational Technology Consortium focuses on the use of:

- Microvideo camera/microscope systems
- Digital pH meters and electronic balances
- Spectrophotometers
- Lasers
- Robotics
- Microcomputers
- Software packages
- Computer network with a mainframe

The Northeast Educational Technology Consortium's objectives are to:

- Upgrade basic skills in mathematics, science and social studies;
- Enhance advanced-level instruction in science, math and business;
- Train staff to use new and existing technology in their instructional roles;
- Increase the instructional options made available by technology.

The Northeast Educational Technology Consortium is giving priority to developmental research and evaluation in the following areas:

- Minnesota Career Information System (MCIS)
- Computer Assisted Drawing (CAD)
- Word processing
- PLATO (mainframe computer project)

INSERVICE

Inservice programs are offered in reading, business and English, scientific and mathematical problem solving, databases for vocational and educational decision making, word processing and student and school records. Training is also available on the district's new science hardware.

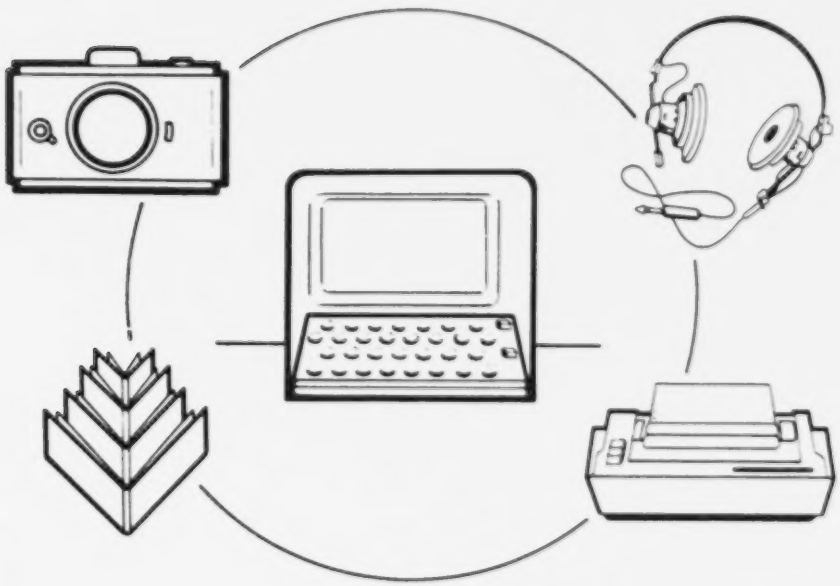
DEMONSTRATION

This site uses a variety of technologies to achieve its objectives. Computers are used as hard and floppy disk networks, terminals to a mainframe and stand-alone. Secondary school counselors use hard and floppy disks to complete college and occupations inventory surveys. Vocational studies classes use robots and three computer-aided drafting software packages. The aerospace class uses a link trainer. The English and business education classes use several word processing packages which visitors may compare.

Science and math, at both the elementary and secondary levels, receive the major portion of the site's resources. Secondary science labs are upgraded by the addition of lasers, microvideo cameras, balances and meters. The math area benefits from a software collection which is shared between the districts. Overall, the technologies used at NEETC are affordable, and in many cases use existing hardware.

For further information contact:

Don Garnett
Duluth Public Schools
Lake Avenue and 2nd Street
Duluth, MN 55802
(218) 723-4102



DEMONSTRATION, DEVELOPMENT, DISSEMINATION: THREE DIMENSIONS OF TECHNOLOGY TRANSFER

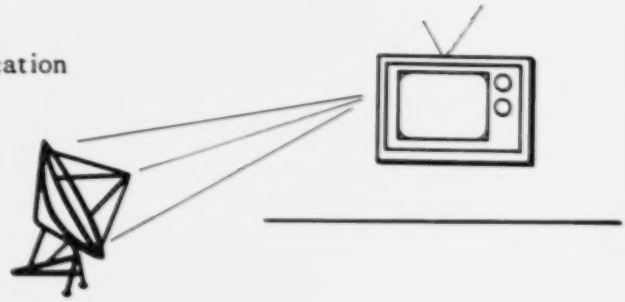
St. Louis Park, a 10-square-mile suburban school district with 4,300 full-time students and 34,000 community education registrants, has combined with Tower-Soudan, an Iron Range district with 500 students in 1,000 square miles, to apply technology that will enhance instruction and improve learning. This site represents a unique, technology-based partnership through which both partners can demonstrate a positive impact on learners.

St. Louis Park/Tower-Soudan focuses on the use of:

- Cooperative learning with microcomputers
- Television and media production
- Community education and technology

St. Louis Park is giving priority to developmental research and evaluation in the following areas:

- Integrating technology into community education
- Curriculum integration activities
- Cooperative learning using technology
- Television production



COOPERATIVE LEARNING WITH MICROCOMPUTERS

This project involves the Apple Education Foundation and the Center for Cooperative Learning at the University of Minnesota. Major projects are planned in senior high writing and curriculum-based LOGO, using LOGO as a programming language tool (similar to writing) for creative problem solving.

TELEVISION AND MEDIA PRODUCTION

This project features student exchanges between St. Louis Park and Tower-Soudan. During these exchanges, St. Louis Park will provide media production exposure to Iron Range students while Tower-Soudan provides peer tutoring and rural exposure to suburban students.

Participants in the television and media production project will develop a model for introducing television/video production to rural school districts.

COMMUNITY EDUCATION AND TECHNOLOGY

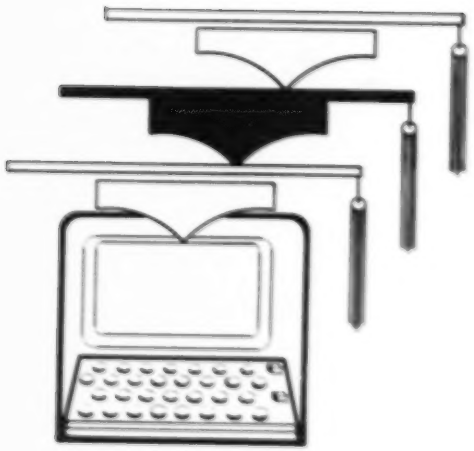
St. Louis Park has a broad program of technology use and integration. More than 80 computer-related classes have been offered in the district, and computers are used heavily in preschool education and program administration. The district's television capacity is used in business-education partnerships which benefit the K-12 program and in publicizing and expanding course offerings. Community education and technology project participants will produce a "how-to" manual which includes suggestions for avoiding problems and pitfalls.

Ongoing curriculum integration of computers and television at all grade levels and in all subject areas is provided as part of continuing scope and sequence development.

St. Louis Park will conduct a computer school for state teachers in early June.

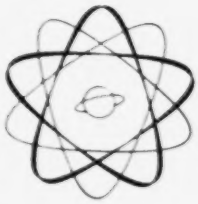
For further information contact:

Deborah Meininger
St. Louis Park Public Schools
6425 West 33rd Street
St. Louis Park, MN 55426
(612) 925-4300



SHAKOPEE TECHNOLOGY DEMONSTRATION PROJECT

The Shakopee technology demonstration site focuses on the use of:



- Corvus Omninet Local Area Network
- Corvus 45-megabyte Winchester disk networks
- Multiple microcomputer labs

The Shakopee Technology Demonstration Project's objectives are to:

- Maximize instructional time through the use of courseware, including record keeping systems;
- Effectively deal with increases in class size;
- Individualized learning for high potential students and make-up work when students are absent;
- Provide an assessment and, if necessary, a review and practice of mathematical skills and understanding for each student at the beginning of the school year.

The Shakopee Technology Demonstration Project is giving priority to developmental research and evaluation in the following areas:

- Networking of computers
- Keyboard writing
- Exploring other areas for computer-supplemented instruction

LOCAL AREA NETWORKS

The Shakopee Technology Demonstration Site presently has eight local area networks in operation. The networks are used for various applications including computer-assisted drafting, word processing, keyboarding, teacher-generated lessons, authoring, programming, speadsheeting, database, mathematics, language arts, instructional management and administrative functions. Networks are located in all district elementary and secondary buildings as well as the Carver-Scott Cooperative Learning Center in Chaska, and the Minnesota Correctional Facility for Women in Shakopee.

Software has been identified which is network compatible and incorporates automated student record keeping and teacher management as much as possible.

For further information contact:

Ron Ward
Shakopee Junior High School
1137 Marschall Road
Shakopee, MN 55379
(612) 445-4884

SHERBURNE-WRIGHT EDUCATIONAL TECHNOLOGY COOPERATIVE

The Sherburne-Wright Educational Technology Cooperative (SW-ETC) is approaching technology development and implementation in a manner which emphasizes the critical need for increased cooperation and coordination among school districts, post-secondary institutions and the business sector. In addition to building new partnerships and strengthening old ones, SW-ETC staff understand that the human component is the most important component in any technology system and have placed major importance on staff involvement and training.

The primary focus of SW-ETC is the implementation of a two-way interactive television system which will initially interconnect eight school districts and the Wright Vocational Center Cooperative through microwave and coaxial cable technology. The system is owned and operated by a cable television company which has permitted the schools access to multiple upstream and downstream channels on their cable television system. The school districts involved are: Big Lake, Buffalo, Delano, Maple Lake, Monticello, Rockford, St. Michael-Albertville and Watertown-Mayer. This system has the potential to expand into: Annandale, Becker, Dassel-Cokato, Elk River, Howard Lake-Waverly and St. Cloud State University.

SW-ETC focuses on:

- Two-way interactive television
- Satellite downlinks
- Administrative and educational computer networking
- A television production studio

The objectives of SW-ETC are to:

- Provide each member school district with current information on all technologies and explore all appropriate educational applications;
- Provide technological training opportunities to all interested teachers who wish to use technology in their classrooms;
- Enhance and enrich educational opportunities for all students, staff and community members;
- Facilitate increased cooperation and coordination among school districts, other educational institutions and local communities and businesses;
- Expand the current capacity of the two-way interactive television system to better meet the needs of school districts.

THE INTERACTIVE TELEVISION COMPONENT

By using a supertrunk coaxial cable system to connect six communities and school districts and a microwave network to connect four communities and school districts,

SW-ETC school districts have access to multiple two-way interactive cable television channels for educational use. This hybrid technological system allows any school district to originate a class from its high school and receive a minimum of three "remote" school district sites during each hour. With the potential addition of four ITFS channels, the capacity of this network is greatly increased. This network provides simultaneous audio and visual communication from a teacher in any member school district to students in several other districts. The network is used throughout the day and evening for K-12, post-secondary, vocational and community educational uses.

SATELLITE

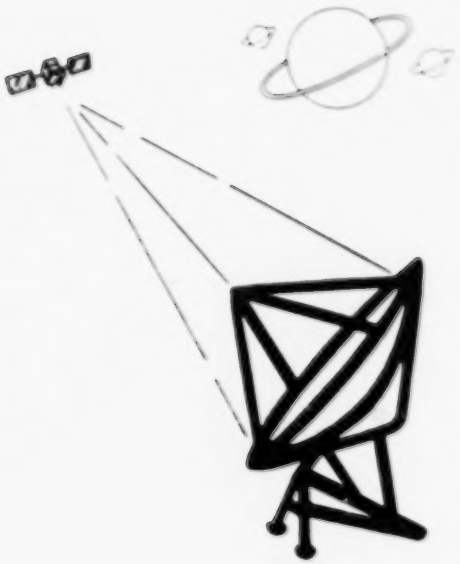
As a member of Classroom Earth, a national educational satellite users organization, SW-ETC is involved with direct satellite feeds from many space shuttle projects and other NASA programs. In addition, SW-ETC encourages and facilitates school district use of satellite teleconferences relating to education.

COMPUTER NETWORKING

Several SW-ETC school districts are implementing computer networking capability for administrative and educational uses. Microcomputer information and applications are shared regularly among SW-ETC school districts.

For further information contact:

Will Kitchen
Monticello Public Schools
Box 897
Monticello, MN 55362
(612) 295-5184



SIBLEY COUNTY COOPERATIVE

The Sibley County Cooperative is an interactive educational interlink among Arlington-Green Isle, Gaylord, Gibbon, and Winthrop that is currently in its planning stages. Project directors are deciding which technologies they will incorporate, and how those technologies will be implemented. The project will be in full operation in fall 1986. The following information is tentative.

The goal of the Sibley County Cooperative is:

- To enrich and enhance educational opportunities for students, teaching staff and the community through the use of a cable system.

The Sibley County Cooperative may focus on the use of the following technologies:

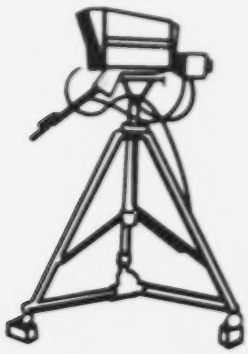
- Interactive television
- Computers
- Advanced placement English and math classes may be conducted via interactive television and computers. These tools may be interfaced via a modem and used to transfer data from one school district to another, e.g., curricular material, library information and district news. The districts also have tentative plans to transfer tests among themselves via facsimile machine.
- Schools are currently installing two-way interactive equipment such as microphones, cameras, and monitors. They will soon be interconnected by cable.

The objectives of the Sibley County Cooperative are to:

- Increase the current educational opportunities for students via the cable system by July 1, 1986;
- Have inservice training on the interactive television system ready by the 1985-86 school year;
- Have the cable system ready for use in community education programs by July 1, 1986.

For further information contact:

David Czech, Director
Sibley County Vocational Center
Box 868
Arlington, MN 55307
(612) 964-5105



SOUTHWEST MINNESOTA TELECOMMUNICATIONS PROJECT

The Southwest Minnesota Telecommunications Project (SWMTC) will provide interactive television capabilities to ten school districts in the southwest portion of Minnesota. These districts include: Adrian, Chandler-Lake Wilson, Edgerton, Fulda, Hills-Beaver Creek, Jasper, Luverne, Magnolia, Pipestone and Slayton.

SWMTC will reach approximately 6,000 students in a four-county, 2,971 square-mile area, providing them with enhanced educational opportunities. Further uses of this interactive television system will include a wide base of community information, educational and security monitoring services, entertainment and a tie-in with public broadcast and satellite services for areas not now receiving such programming.

The Southwest Minnesota Telecommunications Project focuses on the use of:

- Interactive television

The objectives Southwest Minnesota Telecommunications Project are to:

- Offer an expanded curriculum to member schools, including courses for the academically talented;
- Allow districts to be in compliance with proposed Minnesota Department of Education mandates;
- Provide a convenient method for school districts to share teachers and other resources without incurring loss of time and expense for travel;
- Provide a vehicle for adult education by linking up with area vocational technical institutes, junior colleges and universities;
- Provide a vehicle for inservice training for teachers, business leaders and other professionals, as well as area residents;
- Serve as a model for other school district cooperatives who may be interested in the construction and implementation of similar systems.

TECHNICAL SYSTEM

SWMTC will consist of two omnidirectional (ITFS) microwave signals emanating from two central tower sites. One hub tower will be located at Chandler and the other at Magnolia. These two sites will have the capability to transmit between the hubs as well as to the surrounding area, which includes the other eight schools.

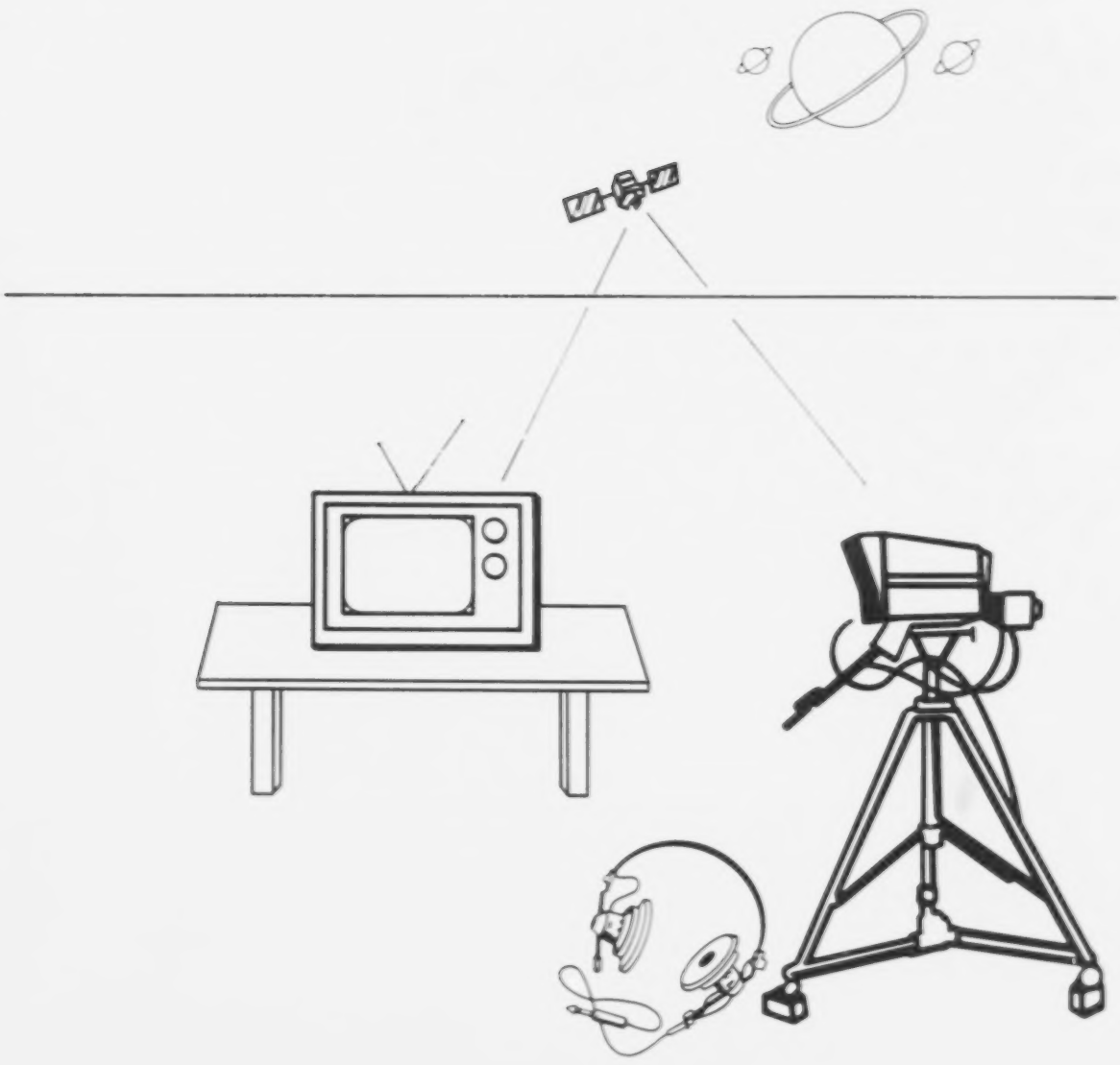
To provide for educational interaction, each district will provide for the transmission of information from its district to the central tower site in its area by use of microwave signals. Tower sites will pick up the directional return signals coming from each district and retransmit the information over the omnidirectional microwave system. Districts will also set up special classroom studios to facilitate this process.

Using the two technologies, a two-way communication cycle can be accomplished enabling persons to see, hear and speak to one another.

For further information contact:

John Lowe
Superintendent
Chandler-Lake Wilson Schools
Box 98
Chandler, MN 56122
(507) 677-2387

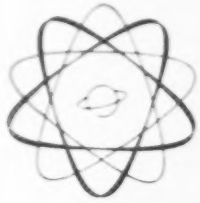
Norman Miller
Superintendent
Luverne Public Schools
Box 278
Luverne, MN 56156
(507) 283-8088



SUBJECT MATTER AWARENESS
IMPLEMENTATION OF RESOURCES IN TECHNOLOGY

Subject Matter Awareness-Implementation of Resources in Technology, or Project SMART, includes 15 school districts: Alvarado, Bagley, Erskine, Fertile, Fosston, Gonvick, Goodridge, Grygla, Hendrum, Humboldt, Kelliher, Lancaster, Middle River, Strandquist and Warren and the Northwest Educational Cooperative Service Unit (NW ECSU). The purpose of the project is to help educators become familiar with available software and ways to seek answers to two recurring problems--training existing staff in the use of new educational technology and lack of use of new and existing educational equipment.

Project SMART focuses on the use of:



- Microcomputers
- Educational software
- Video production and use
- Low technology (e.g., overheads, film projectors, etc.)

Project SMART's objectives are to:

- Train teachers to make optimum use of the technological materials and equipment presently available;
- Expand the use of technological resources within each school

SUPPLEMENTARY PROGRAM FUNDING PRIORITIES

Project SMART is giving priority to developmental research and evaluation in the following area:

- Developing learning packets

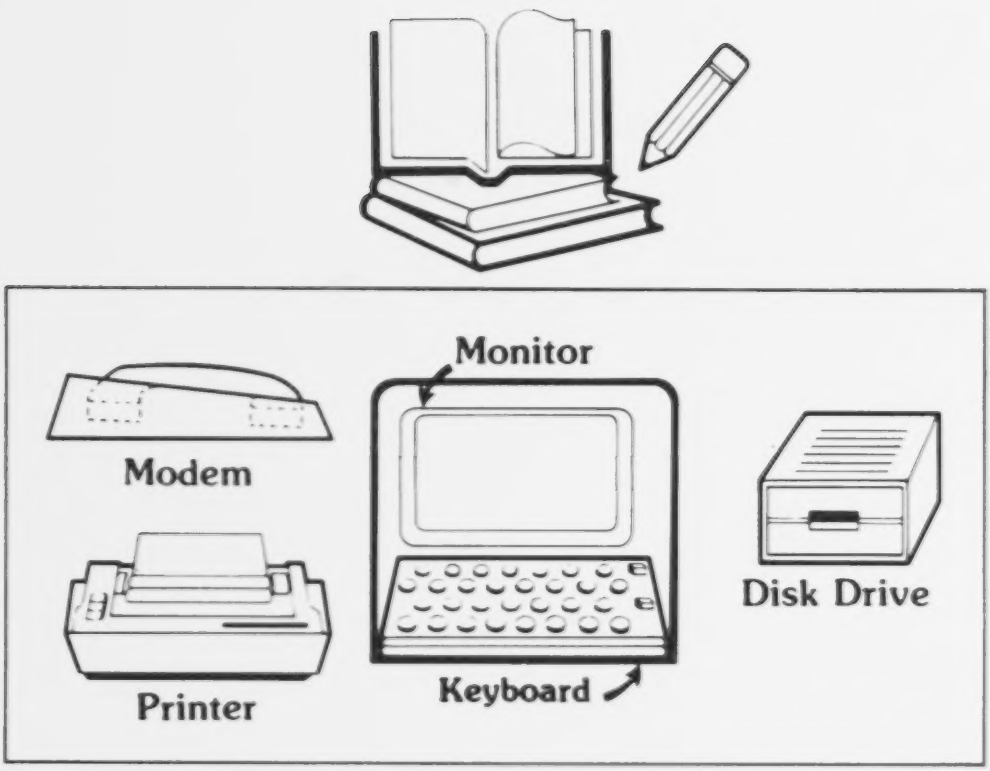
INSERVICE: TEACHER SPECIALISTS

Teacher specialists from 20 subject areas and various grade levels are trained in implementing technology into the curriculum. During the first few months of the 1985-86 school year, teacher specialists will train staff in their districts in the use of various technologies. Later in the year, they will provide inservice training to teachers in the 15 districts in specific subject areas. Inservice within a district will concentrate on technology applications which cross subject lines, e.g., word processing, grade management, teacher utilities, videotape production, teleconferencing, robotics and using an authoring language (E-Z Pilot).

Inservice between districts will concentrate on technology application within a specific subject, such as science, English or the third grade.

For further information contact:

Alice Hofstad
Northwest ECSU
Box 390
Thief River Falls, MN 56701
(218) 681-8005



TECHNOLOGY LEARNING CAMPUS

The Technology Learning Campus (TLC) is the result of District 281's (Robbinsdale Area Schools) commitment to education in the information age and to the appropriate use of technology in all facets of district operations. TLC is a magnet alternative program for students in grades 6-8 and a learning/retraining center for adults. Hands-on experience is an integral part of the project's approach to technology.

The Technology Learning Campus focuses on the use of:

- Electronic on-line databases
- Computer networking systems
- Interactive computer/videodisks
- Interactive television
- Access channel in the home subscriber cable network
- Electronic bulletin boards
- Television production equipment
- Teleconferencing
- Radio
- Robots
- Word Processing
- Traditional audiovisual equipment such as cassette recorders, projectors, filmstrips and microfiche.

The Technology Learning Campus' objectives are to:

- Improve student acquisition of the traditional basic skills--reading, writing and arithmetic, as well as acquisitions of the "new basics"--problem solving, computer science, creativity, global and futures understanding, and use of information sources;
- Build partnerships between the business, residential and education communities in the interest of quality education;
- Maximize technology's potential in learning;
- Provide students with the new technical and social skills, the "coping skills," they need to survive in the twenty-first century.

The Technology Learning Campus is giving priority to developmental research and evaluation in the following areas:

- Integrating district technology learner outcomes into those of the state
- Integrating software into the curriculum

SCHOOL-BASED MANAGEMENT

The Site Council is made up of parents, teachers and community representatives of high technology businesses and community education. It serves as a governing body, making decisions regarding project management, providing continuous evaluation and assisting in apprising district residents of recent program developments. Council members include representatives of both the practical and theoretical viewpoints. By demonstrating the potential of human creativity, providing positive role models and their own diverse input into the curriculum, they provide students with an opportunity to explore the world through different prisms.

VOLUNTEER PROJECTS

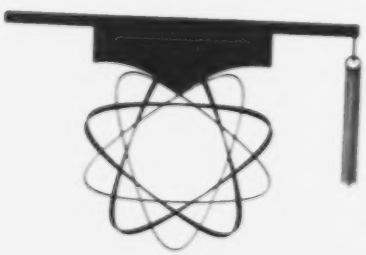
Students are active learners in the community as well as the classroom. During the year, each student commits approximately 15 hours of volunteer time to the community. This interaction with the community engages students in asking questions, acquiring information and solving problems and teaches them to plan and evaluate self-learning.

CURRICULUM PERSPECTIVE

TLC serves both junior high students and adults, using intergenerational learning experiences and a full range of media and teaching strategies. The overall curriculum focuses on a systemized approach, which includes the history and future of an issue and the short- and long-term effects, ranging from local to global. As topics are studied, problem solving skills are emphasized. Students are involved in content learning, problem solving and effective learning. With greater and faster access to information, students become aware of problems related to system security, privacy, shifts in power between information haves and have nots and questions related to the ownership of ideas.

For further information contact:

Barbara Nemer
Technology Learning Campus
4139 Regent Avenue North
Robbinsdale, MN 55422
(612) 535-1790



USE OF INTEGRATED COMPUTER SYSTEM FOR INSTRUCTION IN READING AND MATH

There has been a movement toward networked computer systems to provide not only reinforcement but instruction in the basic skills for elementary students. An integrated system goes one step further in providing a management component to monitor and adjust students' progress through the curriculum.

The WICAT Computer Project at Bel Air Elementary School in Mounds View School District, has been set up to tet the practical use of such a system. The school's faculty and administration are dedicated to using this technology and others in the teaching/learning process.

The WICAT Computer Project focuses on the use of:

- PLATO/WICAT minicomputer, provided by MECC, controlling 30 terminals
- 80-megabyte hard disk
- Sequential curriculums in reading and math, K-8
- A management system to monitor students' progress and provide individualized pacing
- Digitized sound for primary reading
- Data retrieval to permit classroom teachers to keep track of students' progress

The WICAT Computer Project's objectives are to:

- Provide computer-based reinforcement of, and instruction in, reading and math skills for students in grades K-6;
- Pilot a reading curriculum for K-2 students which includes a sound component to guide the students through the instructional sequence;
- Devise a workable way to schedule computer time for every student in the school;
- Explore ways to integrate computer- and classroom-based learning.

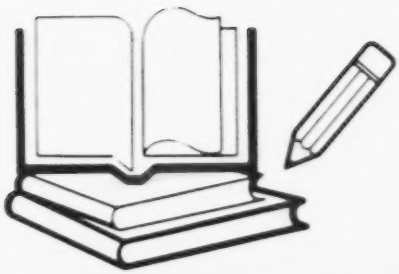
INTEGRATED COMPUTER SYSTEM

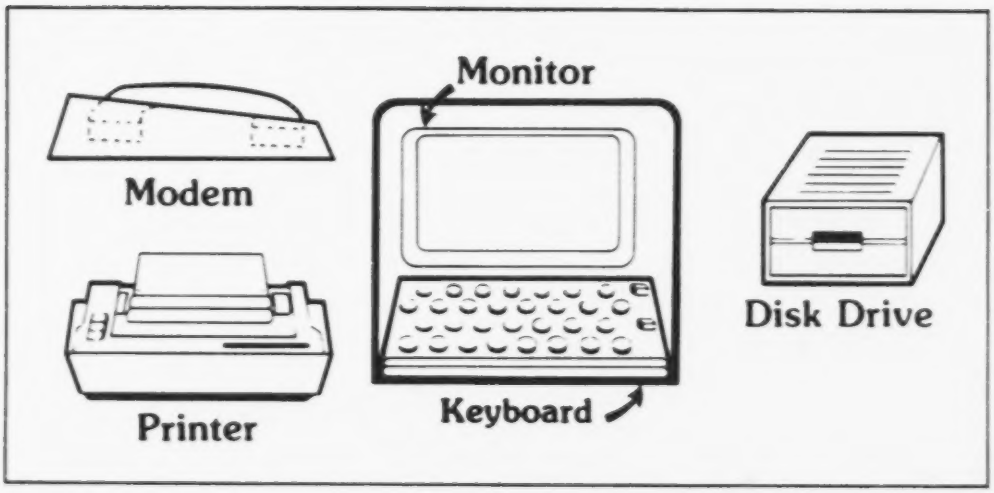
The computer system provides not only instruction and reinforcement for students through the use of a sequential and cohesive curriculum but also, through the use of a management system, monitors students' progress and adjusts both the rate of delivery and level of difficulty of the learning tasks given to each individual student. This allows able students to work far ahead of others.

The management system has enough flexibility to allow teachers to make individual adjustments for students with unusual needs. It also provides information to the teachers which can be used to coordinate the learning in the classroom and on the computer.

For further information contact:

Henry Snyder
Bel Air Elementary School
1800 5th Street NW
New Brighton, MN 55112
(612) 633-3521





WOODLAND COOPERATIVE CENTER COMMUNICASTING

Through the Woodland Cooperative Center Communicasting Project, five school districts--Eagle Bend, Clarissa, Bertha-Hewitt, Parkers Prairie and Staples--offer two-way simultaneous interactive television via low-power UHF and instructional television fixed signal (ITFS). Programs are broadcast using the ITFS microwave system alone or in combination with UHF Channel 45.

This system, which is licensed by the Federal Communications Commission, began in 1980 as a cooperative venture to explore alternative methods of enhancing instruction and educational opportunities in small rural schools.

A new 350-foot tower antenna and planned 1,000-watt transmitter will allow any site to disseminate local programming to the general public within a radius of 50 miles. It is the first project of its kind in the United States.

The Woodland Cooperative Center Communicasting Project focuses on the use of:

- Microcomputers
- Two-way interactive television, using ITFS, low-power UHF
- Video cassette recorders
- Satellite receiving system
- Electronic paper transfer with facsimile machine
- Cable television access

The Woodland Cooperative Center Communicasting Project's objectives are to:

- Demonstrate a fully operational interactive television education system (communicasting), using any combination of ITFS (microwave), low-power and cable;
- Provide for the inservice needs of staff from participating schools and other interested school districts in adopting/adapting interactive television programming;
- Expand those served by the present system to include the cities of Pillager and Motley;
- Measure the effectiveness of instruction via interactive television comparison to on-site, in-classroom, and/or itinerant instruction programs.

COMMUNICASTING

Many rural school districts face two major curriculum problems--insufficient enrollment to make elective course offerings cost effective, and complying with state-mandated requirements and suggestions for curriculum offerings. Communicasting is a cost effective alternative for rural school districts interested in providing curriculum possibilities that might be available only to larger districts.

Courses that will be offered via communicasting during the 1985-86 school year include: shorthand; physics; German I and II; college preparatory; composition; advanced mathematics; career education; elementary foreign language and community education programs.

A unique feature of this system is that it is available to every home with a television set and UHF antennas. This accessibility provides an opportunity for unique community programming. Possibilities include: parenting programs; arts and crafts instruction; candidate forums; college courses; high school commencements and sport events; health and wellness clinics; community organization information; bulletin boards; community events discussions and broadcasting public television programs to an unserved area.

For further information contact:

James A. Hofer, Director
Woodland Cooperative Center
NE 5th Street
Staples, MN 56479
(218) 894-2438

Terence T. Griffiths
Communicasting Coordinator
Cooperative Interactive Television
Parkers Prairie High School
Parkers Prairie, MN 56361
(218) 338-6011